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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/594,152

09/25/2006

Hideomi Koinuma

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38834

7590

11/25/2008

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EXAMINER

HO, ANTHONY

ART UNIT

PAPER NUMBER

2815

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/594,152	<b>Applicant(s)</b> KOINUMA ET AL.	
	<b>Examiner</b> ANTHONY HO	<b>Art Unit</b> 2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 11-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 21-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 14, 2008 has been entered.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 6-8 and 21-24 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kelley et al (US Patent 6,433,359).

In re claims 1 and 6, Kelley et al discloses a transistor with a buffer layer (16) and an organic thin film (18) sequentially deposited on a substrate; wherein said buffer layer comprises pentacene (*it is well known in the art that pentacene has many derivatives and applicants have not specifically claimed a pentacene that is patentably distinct over the pentacene discussed in column 5, line 28 to column 6, line 6 of Kelley*) (Figure 1; column 3 – column 7).

The recitation “said buffer layer accelerates two dimensional growth of said organic thin film, and orients said organic thin film flatly” in the claim is functional language and is treated as nonlimiting since it has been held that in device claims, the device must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) The absence of a disclosure in a prior art reference relating to function did not defeat the Board’s finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference. See MPEP 2114.

In re claims 2 and 7, Kelley discloses a thin layer (14) between the substrate (26) and the buffer layer (Figure 1; column 3 – column 7).

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The recitation “characterized in that a layer easily oriented with said buffer layer” in the claim is functional language and is treated as nonlimiting since it has been held that in device claims, the device must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) The absence of a disclosure in a prior art reference relating to function did not defeat the Board’s finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference. See MPEP 2114.

In re claims 3, 8 and 21-24, Kelley et al discloses the substrate is an insulating substrate and the buffer layer and organic thin film comprises one of the listed materials (column 3 – column 7).

### ***Claim Rejections - 35 USC § 103***

Claims 3-5 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kelley et al (US Patent 6,433,359) as applied to claims 1 and 6 above, and further in view of Afzali-Ardakani et al (US PUB 2004/0183070).

Afzali-Ardakani et al discloses a buffer layer (110) of an organic semiconductor device comprises pentacene (paragraph 0070) and the substrate (100) is a sapphire substrate (paragraph 0069) (Figure 4a).

The advantage is to avoid using high-temperature or costly, high-vacuum processes to obtain the organic semiconductor devices (paragraph 0023).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the transistor as taught by Kelley et al with a buffer layer of an organic semiconductor device comprises pentacene and the substrate is a sapphire substrate as taught by Afzali-Ardakani et al in order to avoid using high-temperature or costly, high-vacuum processes to obtain the organic semiconductor devices.

Furthermore, the claimed invention is a product-by-process claim and even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Claims 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kelley et al (US Patent 6,433,359) in view of Afzali-Ardakani et al (US PUB 2004/0183070).

Kelley et al discloses a transistor with a buffer layer (16) and an organic thin film (18) sequentially deposited on a substrate; wherein said buffer layer comprises pentacene (*it is well known in the art that pentacene has many derivatives and applicants have not specifically claimed a pentacene that is patentably distinct over the pentacene*

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*discussed in column 5, line 28 to column 6, line 6 of Kelley*) (Figure 1; column 3 – column 7).

The recitation “said buffer layer accelerates two dimensional growth of said organic thin film, and orients said organic thin film flatly” in the claim is functional language and is treated as nonlimiting since it has been held that in device claims, the device must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) The absence of a disclosure in a prior art reference relating to function did not defeat the Board’s finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference. See MPEP 2114.

Afzali-Ardakani et al discloses a buffer layer (110) of an organic semiconductor device comprises pentacene (paragraph 0070) and the substrate (100) is a sapphire substrate (paragraph 0069) (Figure 4a).

The advantage is to avoid using high-temperature or costly, high-vacuum processes to obtain the organic semiconductor devices (paragraph 0023).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the transistor as taught by Hirai with a buffer layer of an organic semiconductor device comprises pentacene and the substrate is a sapphire substrate as taught by Afzali-Ardakani et al in order to avoid using high-temperature or costly, high-vacuum processes to obtain the organic semiconductor devices.

Claims 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dimitrakopoulos et al (US PUB 2004/0161873) in view of Hirai (US PUB 2003/0160235).

Dimitrakopoulos et al discloses a transistor with a buffer layer (18) and an organic thin film (16) sequentially deposited on a substrate (10); wherein said buffer layer comprises acene system aromatics (see Figure 5) (Figures 2-3; paragraph 0046 – paragraph 0059).

The recitation “said buffer layer accelerates two dimensional growth of said organic thin film, and orients said organic thin film flatly” in the claim is functional language and is treated as nonlimiting since it has been held that in device claims, the device must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) The absence of a disclosure in a prior art reference relating to function did not defeat the Board’s finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference. See MPEP 2114.

Hirai discloses the organic thin film comprises fullerene (paragraph 0097).

The advantage is to decrease the cost of manufacturing a semiconductor device (paragraph 0003 – paragraph 0005).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the transistor as taught by Dimitrakopoulos et al with the organic thin film comprises fullerene as taught by Hirai in order to is to decrease the cost of manufacturing a semiconductor device.



### ***Response to Arguments***

Applicant's arguments filed August 14, 2008 have been fully considered but they are not persuasive.

In response to applicant's argument that Kelley does not teach a pentacene or pentacene fluoride for the buffer layer, examiner asserts that it is well known in the art that pentacene has many derivatives and applicants have not specifically claimed a pentacene that is patentably distinct over the pentacene discussed in column 5, line 28 to column 6, line 6 of Kelley. Thus, the claimed invention is not patentably distinct over the organic thin film transistor of Kelley.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY HO whose telephone number is (571)270-1432. The examiner can normally be reached on M-Th: 10:30AM-9:00PM EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. H./

Examiner, Art Unit 2815

/Kenneth A Parker/

Supervisory Patent Examiner, Art Unit 2815